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Evaluation and Formulation of Lip Balm Preparation From Aloe Vera (Aloe Vera) and Bit (Beta Vulgaris) Fruit Extract as Natural Dye

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ABSTRACT

Lip balm is a cosmetic preparation that is useful for moisturizing and shiny lips. The purpose of this study was to formulate lip balm preparations using Bit Fruit Extract (Beta Vulgaris) and to evaluate its effectiveness as a lip moisturizer. Beetroot extract (Beta Vulgaris) was formulated with concentrations of 0%, 6%, 8%, and 10%, as a blank used lip balm base. Tests on lip balm preparations include homogeneity test, pH measurement, irritation test and stability test of the preparation with parameters such as odor, color and pH during 12 weeks of storage. Bit (Beta Vulgaris) extract lip balm with a concentration of 10% can provide a moisturizing effect Lips are best at restoring lip skin after 4 weeks.

INTRODUCTION

The aloe vera plant belongs to the Liliaceae family, has considerable potential as a raw material for natural medicine. The opportunity for medicinal plants is currently getting bigger, so that people tend to turn to natural ingredients. Natural materials have the opportunity to become a large trading commodity. Aloe vera plant originating from Africa has more than 300 species. Red beet (Beta vulgaris) contains carbohydrates but the content of fat, calories and protein is very low. But in this red beet (Beta vulgaris) there are several amounts of nutrients such as folic acid, potassium, protein, vitamin C, magnesium, iron, phosphorus. Many people use red beetroot (Beta vulgaris) as well as body health (1). Lipbalm is a waxy substance that is applied and applied to the lips need protection. In conditions of low air humidity or because the temperature is too cold, giving lipbalm prevents evaporation of water and epithelial cells of the lip mucosa. Lipbalm is a cosmetic preparation made with the same base as lipstick, but without color, so it looks transparent (2).

One of the natural ingredients that we can use as a dye for cosmetics is red beetroot (Beta vulgaris) this fruit comes from Sweden and Britain, continental Europe and will grow in highland areas. In Indonesia beet orchards (Beta vulgaris) can be found in the highlands of West Java. This fruit is usually used as a mixture of food, food coloring and can also be used as a medicine. The natural red substance contained in red beetroot (Beta Vulgaris) gives a distinctive color to lipblam so that it can provide lipblam safety because its use is made from natural ingredients which relatively do not cause side effects or lip damage. As a new innovation, red beetroot is used as the basic ingredient for making lipblams so that the cells on our lip skin don't use a lot of lip coloring products whose ingredients come from chemicals. Based on the description above, it is necessary to experiment with the use of red beetroot (Beta vulgaris) as the basis for making lipblam. According to Riski (2019) regarding the formulation of Bit Fruit extract lipbalm (Beta Vulgaris.) 0%, 6%, 8%, and 10% (3). With 10% aloe vera extract, it can produce a homogeneous lipbalm preparation, the pH meets the requirements of the normal pH standard of human skin, namely 4.5-6.5, and in the stability test there is no change or remains stable after storage (4). Based on the description above, a research was conducted on lipbalm preparations from beetroot extract (Beta vulgaris) with concentrations of 0%, 6%, 8%, 10%. In previous studies, the concentration of 10% has met the standard of good physical properties test.

METHODOLOGY

This research was conducted in the laboratory of KiMIA UMTS and PHARMASETIKA UNAR with a period of 2 months. This research is experimental, in this study the comparison group was not used, only the experimental group was used. After the group was given treatment or intervention, the results were observed (5). This research was conducted by designing, formulating, and evaluating the preparation of Lipblam Bit Fruit Extract (Beta Vulgaris) as a Lip Moisturizer. The material used in this study was Bit Fruit Extract (Beta vulgaris L.). The fruit part was ground and dried to form a powder. 800 g of dry powder was extracted by 70% methanol by percolation method with occasional stirring for 3 days. The extract was concentrated using an evaporator. The remaining 60 g of residue was dissolved with distilled water and re-extracted with diethyl ether, chloroform, and ethyl acetate. Each extract fraction was dried with anhydrous sodium sulfate and the solvent was distilled off. The extract was tested qualitatively to determine the content of secondary metabolites.

The basic formula used is Glycerin 5 grams, Cera flava 10 grams, Nipagin 0.18 grams, Lanolin 15 grams, Oleum cacao ad 100. Made into 4 formulas with variations in the concentration of Bit Fruit (Beta Vulgaris) 0 % (F0), 6 % (F1), 8 % (F2), and 10 % (F3). Evaluation of Homogeneity, Melting Temperature, pH Test, Irritation Test and Hedonic Test.

The equipment used in this study were electric balance, 10 ml measuring cup, 1000 ml beaker glass, 100 ml beaker glass, 50 ml beaker glass, watch glass, mortar and steamer, knife, porcelain cup, parchment paper, hot plate, flannel cloth. , rotary evaporator, water bath, oven, glass funnel, stir bar, blender, slide glass, digital pH meter, spatula, spatula, tube clamp, dropper, and Lip blam container.

Materials the materials used in this study were Cera flava, glycerin, aquades, lanolin, Aloe vera (Aloe vera L) extract, Bit Fruit (Beta Vulgaris), nipagin, cacao oleum, 70% ethanol. Evaluation Testing is done by:

1). Homogeneity Examination of Preparations Each preparation was checked for homogeneity by applying a certain amount of the preparation on a transparent slide with a certain area (2.5 x 2.5 cm). The preparation must show a homogeneous arrangement and there are no visible coarse grains (6).

2). Melting Temperature of Preparations The ideal melting temperature of lip balm is actually set to a temperature that is close to the lip temperature, varying between 36-380C. However, due to the need to pay attention to the resistance factor to the surrounding weather temperature, especially the temperature of the tropics, the melting temperature of lip balm is made high, which ranges between 50- 70 0C (7).

The method of observing the melting temperature of the lip balm used in this study was to put as much as 1 gram of lip balm into the oven with an initial temperature of 500C for 15 minutes, observed whether it melted or not, after that the temperature was increased by 10C every 15 minutes and observed what temperature the lip balm was melted. Balm begins to melt (8).

3). pH Test Preparations The pH of cosmetics should be kept as close as possible to the physiological pH of the "acid coat" of the skin, which is between 4.5-6.5. Such cosmetics are called "pH-balanced" cosmetics. The more alkaline or acidic the material hits the skin, the harder it is to neutralize it and the more tired the skin will be. Skin can become dry, cracked, sensitive and easy infected (9). Determination of the pH of the preparation is carried out using a pH meter by: The instrument is first calibrated using a neutral standard buffer solution (pH 7.01) and an acid buffer solution (pH 4.01) until the instrument shows the pH value. Then the electrode was washed with distilled water, then dried with a tissue. The sample was made in a concentration of 1%, which was weighed 1 g of the preparation and dissolved in 100 ml of distilled water, then heated. After the solution temperature is normal, the electrode is immersed in the solution. Let the tool show the pH value until it is constant. The number shown by the pH meter is the pH of the preparation (10).

4). Irritation Test. The technique used in this irritation test is an open patch test on the inner forearm to 10 panelists who are willing and write a statement. An open patch test is carried out by applying the preparation to a certain area of attachment (2.5x2.5 cm), leaving it open and observing what happens. This test was carried out 3 times a day for two consecutive days. The inclusion criteria for the irritation test included: women aged 20-30 years, physically and mentally healthy, had no history of allergic diseases, and stated their willingness to be respondents. The reaction observed was the occurrence of erythema, papules, vesicles or edema.

5). Stability Test The preparation of the finished lip balm was evaluated for 28 days (4 weeks) which included organoleptic observations (color, odor, shape) whether there were 40 changes during storage at room temperature, i.e. 25·C and protected from light (2).

The analysis aims to determine the relationship between independent variables with dependent variables and external variables with the dependent variable. The statistical test used is the chi-square test. Calculate the

strength of the relationship with the Prevalence ratio (PR), 95% confidence interval (CI) and the significance level of p <0.05. And multivariable analysis is done to see the relationship between independent variables and external variables together with the dependent variable. The statistical test used is a binomial regression to calculate the strength of the relationship by looking at the Prevalence Ratio (PR) and 95% confidence interval (CI).

RESULTS AND DISCUSSION

The results of phytochemical screening have been carried out by previous researchers (Agustina, 2016). The results can be seen in the table:

No.	Reactor	Simplicia
1	Alkaloids	-
2	Flavonoids	+
3	Glycoside	+
4	Saponins	+
5	Tannins	+
6	Steroids/Triterpenoids	+/-

Information:
+ = contains compounds
- = does not contain compounds

The results of the phytochemical screening of simplicia and ethanol extract of Bit Fruit (Beta Vulgaris) showed the presence of groups of glycosides, saponins, flavonoids, tannins and steroids.

The results of homogeneity examination of the lip balm preparation of Bit Fruit extract (Beta Vulgaris) with concentrations of 0%, 6%, 8%, 10% indicate that the preparations made have a homogeneous composition. It is characterized by the absence of coarse grains when the preparation is applied to transparent glass. This shows that the preparations made have a homogeneous composition (11).

The results of the examination of the melting temperature of the lip balm showed that the lip balm preparation of Bit Fruit extract (Beta Vulgaris) ranged from 36-380C. The ideal melting temperature of the lip balm is actually set to a temperature close to that of the lips, varying between 36-38°C. This shows that the preparation of Bit Fruit extract lip balm (Beta Vulgaris) meets the ideal temperature requirements in lip balm.

The results of the pH examination showed that the lip balm preparation without beetroot (Beta vulgaris) had a pH of 5.2. Meanwhile, preparations made using beetroot (Beta vulgaris) have a pH of 5.5-6.2. The difference in the pH of the preparation is caused by the difference in the concentration of the beetroot (Beta vulgaris) used, the higher the pH of the preparation. The pH of lip balm preparations is in the physiological pH range of the skin, which is 4.5-6.5. This shows that the lip balm preparations made are safe and do not cause irritation to the lips.

The difference in the concentration of the beetroot (Beta vulgaris) used, the higher the pH of the preparation. The pH of lip balm preparations is in the physiological pH range of the skin, which is 4.5-6.5. This shows that the lip balm preparations made are safe and do not cause irritation to the lips.

Based on the results of irritation tests conducted on 10 panelists, which was carried out by applying lip balm preparations on the skin of the 33 inner forearms for 2 consecutive days, it showed that all panelists did not show a reaction to the irritation reaction parameters observed, namely the presence of erythema, papules. or the presence of vesicles. From the results of the irritation test, it can be concluded that lip balm preparations are safe to use (9).

CONCLUSION

Differences in the concentration of beetroot extract (Beta vulgaris) have an effect on lip balm providing moisture. The preparation of 10% beetroot extract lip balm (Beta vulgaris) is the best preparation in increasing the water content of the lips from a dehydrated state (5.7%) to a normal state (29.8).

REFERENCES

1. Maheswari TU, Anitha KG, Rakesh SS, Sara PBK. Metabolic Engineering and Omics Technologies. In: Advances in Food Bioproducts and Bioprocessing Technologies. CRC Press; 2019. p. 193–214.
2. Ratih H, Titta H, Ratna CP. Ylang flower oil lip balm formulation (Cananga Oil) as an emollient. Pros Simp Penelitian Yogyakarta Leutika Prio. 2014;
3. Riski A. Supervisi Akademik Kepala Sekolah. 2019;
4. Yuan M, Ren Y, Xu C, Ye F, Du X. Characterization and stability study of a form-stable erythritol/expanded graphite composite phase change material for thermal energy storage. Renew energy. 2019;136:211–22.
5. Notoatmodjo S. Health research methodology. Jakarta: Rineka Cipta. 2010;87.
6. Suparmi S, Ginting AJ, Mariyam S, Wesseling S, Rietjens IMCM. Levels of methyleugenol and eugenol in instant herbal beverages available on the Indonesian market and related risk assessment. Food Chem Toxicol. 2019;125:467–78.
7. Haque Akanda MJ, MR N, FS A, Shaarani S, Mamat H, Lee JS, et al. Hard fats improve the physicochemical and thermal properties of seed fats for applications in confectionery products. Food Rev Int. 2020;36(6):601–25.
8. Toro-Vazquez JF, Morales-Rueda JA, Dibildox-Alvarado E, Charó-Alonso M, Alonzo-Macias M, González-Chávez MM. Thermal and textural properties of organogels developed by candelilla wax in safflower oil. J Am Oil Chem Soc. 2007;84(11):989–1000.
9. Tranggono RI, Latifah F. Cosmetic science handbook. Jakarta PT Gramedia Pustaka Utama. 2007;3(47):58–9.
10. Chung H, Sulkin MS, Kim J, Goudeseune C, Chao H, Song JW, et al. Stretchable, multiplexed pH sensors with demonstrations on rabbit and human hearts undergoing ischemia. Adv Healthc Mater. 2014;3(1):59–68.
11. Maysarah H, Sari I, Faradilla M, Rosa EE. Stick Perfume Formulation from Jeumpa Flowers (Magnolia champaca (L) Baill Ex. Pierre). 2020;